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Next 1 Page(s) In Document Exempt

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NPIC/R-1449/63

## IRBM LAUNCH COMPLEX NEAR GUANAJAY, CUBA

## CHRONOLOGY OF CONSTRUCTION

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The Guanajay IRBM Launch Complex southwest of Havana, identified on photography of [REDACTED] consisted of two launch sites (Figure 1). Launch Site 1, located 2.5 nautical miles (nm) east-northeast of Guanajay at 22-57-00N 82-39-25W, and Launch Site 2, located 4.7 nm east-northeast of Guanajay at 22-57-25N 82-36-55W, can be

seen in very early stages of preparation (Figure 2) on photography of [REDACTED]

Site 1 was estimated to be over 50 percent complete by [REDACTED] while Site 2 was in an earlier stage of construction. As of [REDACTED], it was estimated that Site 1 was approximately 80 percent complete, whereas construction of Site 2 was estimated to be two

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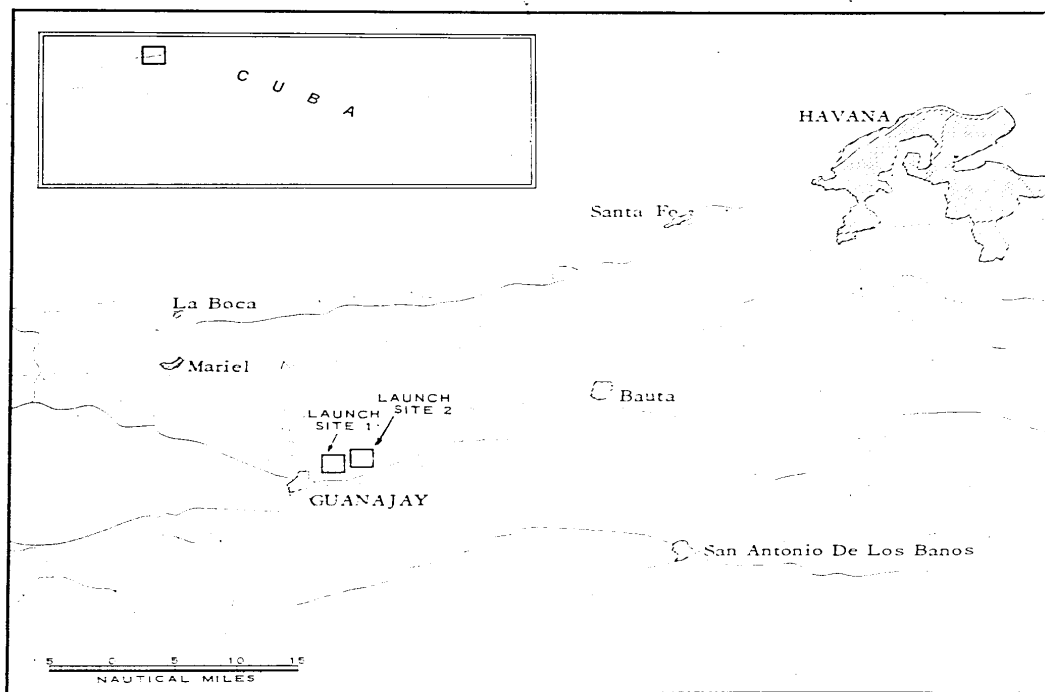


FIGURE 1. LOCATION OF IRBM LAUNCH COMPLEX.

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NPIC/R-1449/63

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weeks behind that of Site 1. On [REDACTED] the launch sites is outlined below, and details [REDACTED] it was noted that both sites were being abandoned. The chronology of construction at [REDACTED] are given in Table 1.

Table 1. Guanajay IRBM Launch Complex. Chronology of Construction

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| Date            | Launch Site 1   | Launch Site 2  |
|-----------------|---|--|
| [REDACTED]      | <p>Pad areas probably cleared of brush<br/>Security fence probably U. C.<br/>(Not observed on photography)</p> <p>Foundations probably laid for control bunkers<br/>Excavations probably trimmed to size<br/>(Not observed on photography)</p> <p>Segments probably in all excavations<br/>Probably preparations for concrete work<br/>(Not observed on photography)</p> <p>Blast walls probably built<br/>Cable trenches probably dug<br/>Concrete segments probably placed in trenches and covered<br/>Control bunker probably assembled<br/>(Not observed on photography)</p> <p>Control bunkers erected<br/>Cable trenches nearly finished<br/>Blast walls erected<br/>Concrete poured on some pads<br/>Excavation for liquid storage tanks</p> | <p>Probable pad areas cleared of brush<br/>Probable security fence U. C.<br/>Foundation for probable rectangular bldg<br/>Excavations across pads</p> <p>Foundations for probable control bunkers<br/>Concrete segments piled beside excavation<br/>Three (3) excavations trimmed to size; segments assembled alongside<br/>Roof ready for rectangular bldg<br/>Excavation for 4th pad</p> <p>Segments placed in one excavation<br/>Crane assembling prefab control bunker parts<br/>Rectangular bldg still U. C.<br/>Segments in all excavations; preparations for concrete work</p> <p>Blast walls probably built<br/>Cable trenches probably dug<br/>Concrete segments probably placed in trenches and covered<br/>Control bunker probably assembled<br/>(Not observed on photography)</p> <p>Pads cleared of brush<br/>Security fence U. C.<br/>Rectangular bldg U. C.<br/>Excavations across 3 pads<br/>Foundations for control bunkers</p> |
| 25X9 [REDACTED] | <p>Concrete on 2 pads; still at work on others<br/>Excavations for liquid storage tanks<br/>Security fencing construction</p> <p>More fill being added to pad areas<br/>Liquid storage tanks noted beside excavations</p> <p>Equipment cabling and control bunkers appeared complete<br/>One ready bldg U. C.</p> <p>Third pad being concreted<br/>Approaches graded for one pad, fill added to others</p>  | <p>Construction continues on security fence<br/>Rectangular bldg U. C.</p> <p>Concrete segments piled beside one excavation</p> <p>Cabling and control bunkers U. C.</p> <p>Three excavations trimmed to size; segments of proper shape beside one excavation<br/>Roof ready for rectangular bldg</p>  |

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NPIC/R-1449/63

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Table 1. (Continued)

| Date | Launch Site 1  | Launch Site 2   |
|------|--|---|
|      | <p>More fill on pads</p> <p>Foundations for 2 ready bldgs observed</p> <p>Approach aprons graded for 4 pads</p> <p>Crane working on ready bldgs</p> <p>Two liquid storage tanks placed in excavation</p> <p>Microwave communications link noted</p> <p>Missile-support equipment arrives</p> <p>Pads being graded, some fill added</p> <p>Additional cable ditches noted</p> <p>Probable missile-troop tents being erected</p> <p>Site in process of being destroyed abandoned</p> | <p>Excavation on 4th pad</p> <p>Control bunkers U.C.</p> <p>Low-pitched roof on rectangular bldg nearly complete</p> <p>Concrete blocks for one wall at a control bunker in place</p> <p>Concrete segments placed in one excavation</p> <p>Crane assembling prefab segments</p> <p>Rectangular bldg nearly complete</p> <p>Segments in all excavations</p> <p>Forms indicate concrete work to begin on pads</p> <p>Site in process of being destroyed abandoned</p> |

Estimated Time Required for Completion of Launch Sites:

- Site 2 - Transverse excavations - 5 days
- Site 2 - Rectangular building - 12 days (shell erected)
- Site 2 - Assembly of segments in excavations - 2 days
- Site 2 - Pads concreted (at least 3) - 5 days
- Site 2 - Earth fill at pads - 12 days (minimum)

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Launch Site 1, as observed on [redacted] appeared to have control bunkers and blast walls erected, cable trenches nearly finished, and concrete poured on some of the pads. Excavations for fuel tanks were noted, [redacted] struction. Pad areas at Launch Site 2 had been cleared, and security fencing was being erected. Foundations had been laid for control bunkers, and there were excavations across three of the pads. A rectangular building also was under construction. The launch sites are shown on photography of [redacted] in Figure 3.

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An examination of Mis- [redacted] indicated that four launchers, two control bunkers, and underground liquid storage facilities were being built at each of the Guanajay IRBM sites. Site 1 was considered to be in a mid-to-late stage of construction, with operational capability within six weeks. Site 2 was in an earlier stage of construction, with operational status estimated between [redacted] There were no missiles or support equipment detectable within the Guanajay area on [redacted] Nearly all features of sites in the Guanajay area observed to date indicated heavy construction of a permanent nature. At Site 1, heavy

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25X1D construction involving excavations for liquid storage tanks, transverse cable trenches, and probable vehicle revetments had been observed. Concrete was being poured for launch pads, and two concrete batch plants were present. Four [REDACTED] liquid storage tanks were located adjacent to one excavation. The site was being fenced and no mobile missile-related equipment had thus far been identified in the vicinity of the site. Only a few of these features were seen at Site 2, which was in an earlier stage of construction.

struction activity precluded the possibility of mobile missile-related equipment occupying these sites at the time.

It was determined from photography that the earliest date Site 1 could have been started was [REDACTED]. The appearance of the site six weeks later indicated an urgency in the site construction program. The remaining construction work could probably have been completed on this urgent basis in four to six weeks. Six weeks was considered the earliest time that this site could reach an operational status and still allow time for a thorough check of installed equipment. Construction at Site 2 appeared to lag behind that at Site 1 by about one month.

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No missiles or missile-associated equipment were observed in the area of the sites. In addition, the current nature and extent of con-

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FIGURE 2. IRBM LAUNCH SITES 1 AND 2 [REDACTED]

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NPIC/R-1449/63

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A detailed re-examination of [REDACTED] indicated that several features of the sites such as the control bunkers, excavations for liquid storage tanks, and blast walls for component protection were several days more advanced than previously determined. Concrete was being installed at all four pads at Launch Site 1.

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indicated that Launch Site 1 consisted of four concrete launch pads in a late stage of construction. The equipment cabling and control bunker appeared complete. Liquid storage tanks and

one ready building also were under construction.

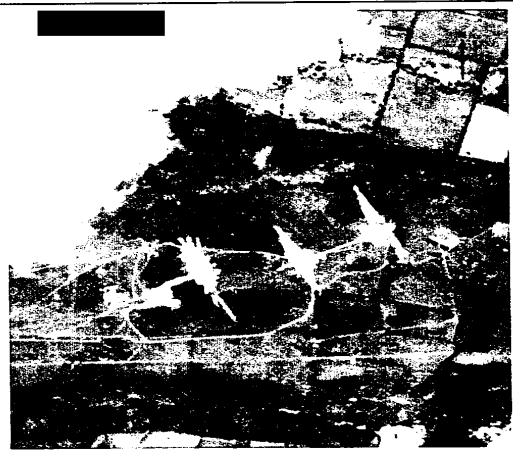
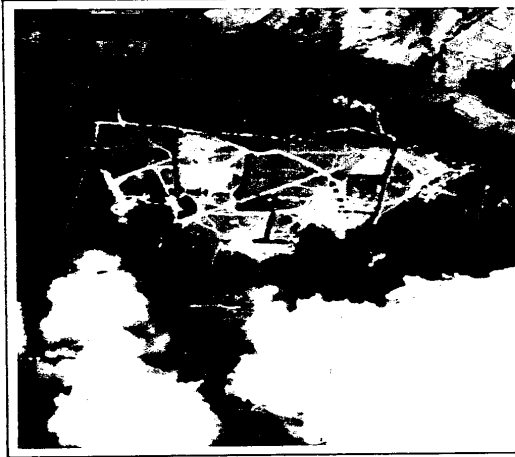
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indicated continued construction activity at Launch Site 1. This site (Figure 4) consisted of four launch pads in a late stage of construction. The equipment cabling and control bunkers appeared complete. Liquid storage tank excavations and one ready building were under construction; liquid storage tanks were observed near the excavations. No

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FIGURE 3. IRBM LAUNCH SITES 1 AND 2

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NPIC/R-1449/63

Launch Site 2 was in an earlier stage of construction than Site 1. The pad area, cabling, and control bunkers were under construction. No

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indicated that construction was continuing at a rapid pace at Launch Site 1. The four concrete pads were in a late stage of construction and the approach aprons had been graded. The equipment cabling and control bunkers appeared complete. Two liquid storage tank excavations were observed,

with two storage tanks alongside. The large

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was completely earth covered. Foundations for two missile-ready buildings were observed along the long axis of two of the pads. No missiles, transporters, or erectors were noted at the site.

Launch Site 2 was in an earlier stage of construction than Site 1. Excavation was continuing at the locations of the four launch pad areas. The low-pitched roof of the rectangular building to the west of the pads was partially in place. Cabling and control bunkers were still under construction. Excavation for liquid storage tanks had not started.

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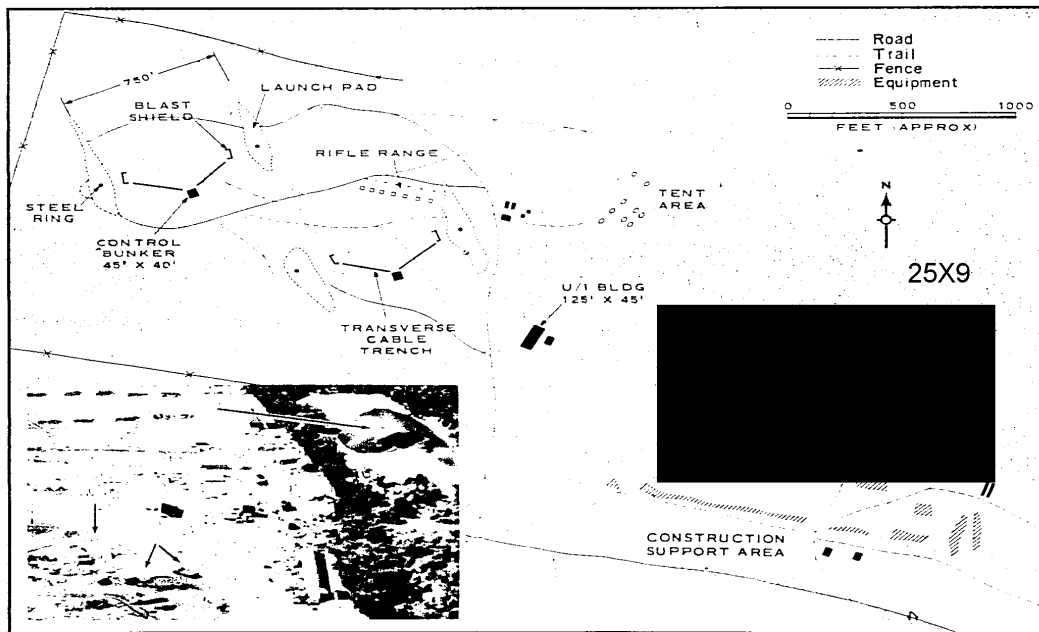


FIGURE 4. IRBM LAUNCH SITE 1.

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[REDACTED]  
revealed considerable construction progress at Launch Site 1. The four concrete pads were in a late stage of construction and the approach aprons had been graded. Surveying equipment and personnel were noted on two of the pads. An extension of the approach apron on the north side of the westernmost pad appeared to be the position of a future missile-ready shelter. There were four liquid storage tanks visible; the tanks measured [REDACTED]. Cable trenches between the pads and the control building appeared complete. Fourteen cable reels were observed in the vicinity of each pair of pads. The control building appeared to be a tropical-type structure made of prefabricated masonry, with concrete pillars and rafters. An irregular pattern on the roof

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[REDACTED]  
storage area contained many preformed concrete slabs of various sizes. No missiles, transporters, or erectors were observed in the site area.

Considerable construction activity was observed at Site 2, which was in an earlier stage than Site 1. The control buildings between each pair of pads were under construction. Masonry sidings had been partially erected. The rectangular building west of the launch pad areas was still under construction. The side frames had been erected and the roof was partially assembled. A concrete batch plant could be seen near this site. No missiles, transporters, or erectors were noted in the site area.

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[REDACTED]  
indicated that further construction progress had been made at Launch Site 1. The four concrete

pads and the control building were in a late stage of construction. Concrete slabs were stacked near the probable location of a ready building and a mobile crane was nearby. The foundation had been started for a second ready building. Two of the eight liquid storage tanks had been placed in an excavation at one of the pads.

Preparation of Launch Site 2 also continued. There was construction activity at the launch control building at the western pair of pads, and at all four pad areas. The roof of the rectangular building near the pads was almost complete. The concrete blocks in one wall of one of the control buildings were also in place. The square concrete conduit segments had been put into one of the trenches. Two of the other trenches had these segments alongside. There were three mobile cranes operating at the site.

A possible regimental headquarters area was also observed at 22-57-00N 82-38-25W, about midway between Guanajay IRBM Site 1 and Site 2. The area contained approximately ten buildings, all of which were present prior to [REDACTED]. A known military camp, this facility may have been occupied by the Soviets; vehicles and personnel were visible. There was also evidence of vehicle movement between the area and Sites 1 and 2.

A microwave communications station was identified adjacent to the headquarters area. It consisted of an antenna tower with two parabolic antennas, and two buildings near the base of the tower. One of the parabolic antennas, approximately [REDACTED] in diameter, was oriented toward a large high-frequency radio station near Bauta; the orientation of the other was not determined. One of the buildings near the antenna was complete, and the second was under construction.

[REDACTED]  
indicated construction was continuing at Launch Site 1, and vehicle activity was noted throughout the area. Conduit had been placed at three of the

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NPIC/R-1449/63

launch pads and preparations for conduit at the fourth pad was in progress. At least 44 missile-support vehicles were identified some 500 yards south of the open storage area, including 2 fuel trailers, 2 oxidizer trailers, 2 tracked prime-movers, and 7 van-type trucks. Preparation of the site was continuing and missile-support equipment had arrived at an assembly area south of the site.

The photography also showed continuing activity and the presence of personnel at Site 2. The large rectangular building near the pads was nearly complete. 25X1D

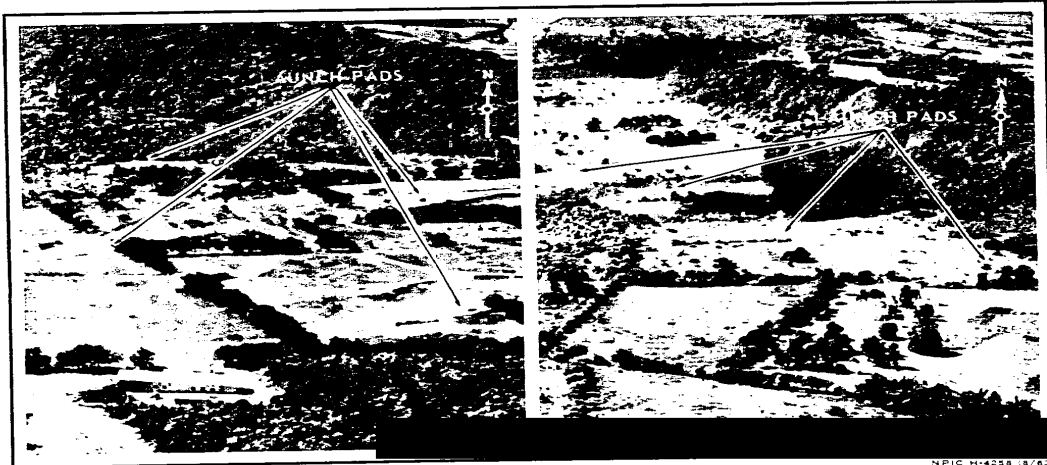
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showed construction still continuing at Launch Site 1. Considerable vehicle activity was noted. Two additional possible fuel trailers had been moved into the area. Two tents had been erected in the vehicle park area and foundations were being prepared for several more.

Construction activity continued at Site 2. Concrete conduits had been placed in the trenches which were prepared on [REDACTED]. Prefabricated concrete blast shields had been added. The launch pads had not been completed, but forms and other construction material at the launch pad positions indicated that concrete work was about to begin. Construction-type vehicles were active throughout the site.

[REDACTED] showed that construction activity at the IRBM sites had been stopped and the installations partially destroyed (Figure 5). The steel rings had been removed from the center of some pads. Nine steel rings were observed throughout the complex; four at the construction support area (three on the ground and one on a truck), four at Site 1, and one at Site 2. There still were no indications of initiation of construction of a bunker at Site 2.

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FIGURE 5. IRBM LAUNCH SITES 1 AND 2 [REDACTED]

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NPIC/R-1449/63

Site 1 was being evacuated and had no operational capability. The foundations for the launch stands and some of the precast concrete conduit appeared to have been torn up and the equipment removed. There were trucks, prime movers, trailers, and powered heavy construction equipment visible in a support area about one nm south of the site. Other heavy construction equipment was assembled in an open storage area. Tents, which had been erected near the site, were gone. The site, under active construction at least through [REDACTED] was being deactivated with the removal of missile ground support equipment. Some destruction of concrete work was evident. Site 2 had no operational capability, as it was incomplete and construction activity had ceased.

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[REDACTED] uction had [REDACTED] At Launch Site 1 no change had been noted since the [REDACTED] photography, when the bunker appeared to be complete. At Launch Site 2 no signs of any bunker were found on the [REDACTED] or previous photography.

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[REDACTED] revealed that the tents and most of the vehicles south of Launch Site 1 had been removed; only six objects, possibly vehicles, were in the launch pad area. The control buildings and launch pads appeared unchanged since the last previous coverage of [REDACTED] although the small scale of the photography precluded a detailed assessment. Five of the storage tanks at the pads had been moved to the construction support area. There [REDACTED]

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The small scale of the photographic coverage of Site 2 precluded detailed interpretation.

An area located between Site 1 and Site 2, which had provided support to the construction effort, still contained numerous buildings and vehicles; however, the number of vehicles had been reduced by about one half.

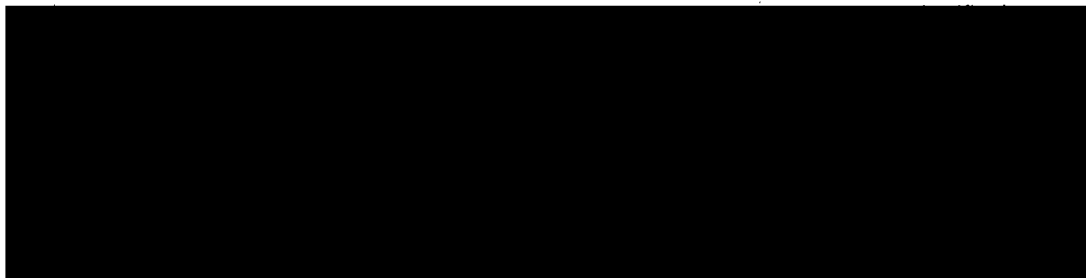
[REDACTED] Missions flown on this date indicated that the known IRBM and MRBM sites were being abandoned. Some trucks and tents, probably awaiting transport, remained at several of the sites.

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## REFERENCES

## PHOTOGRAPHY

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- 9 -

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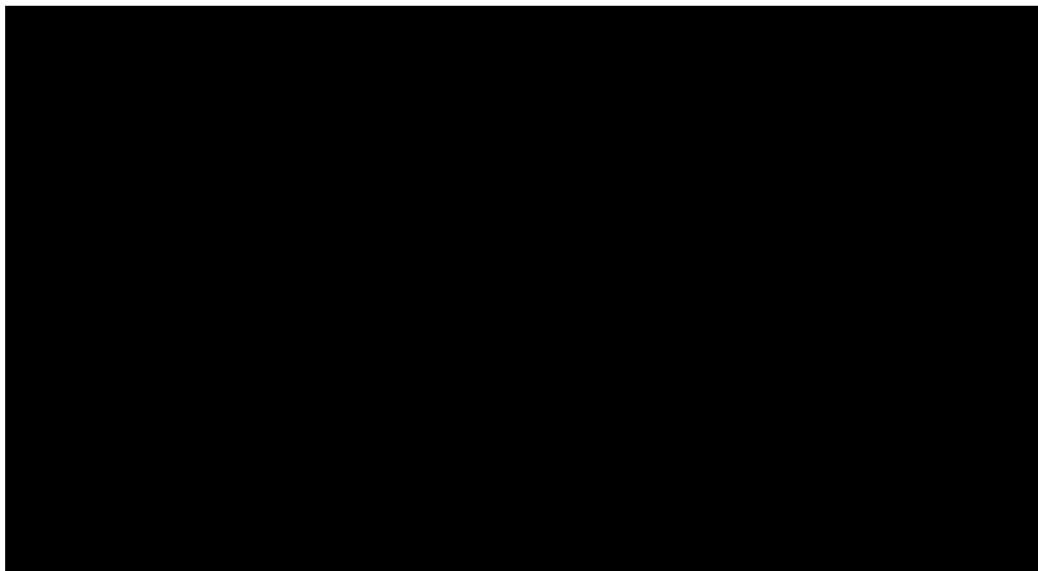
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REFERENCES (Continued)

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PHOTOGRAPHY



MAPS OR CHARTS

AMS. Series E502, Sheet NF 17-5, 1st ed, Oct 62, scale 1:250,000 (FOR USE BY US GOVERNMENT OFFICIALS ONLY)

DOCUMENTS

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